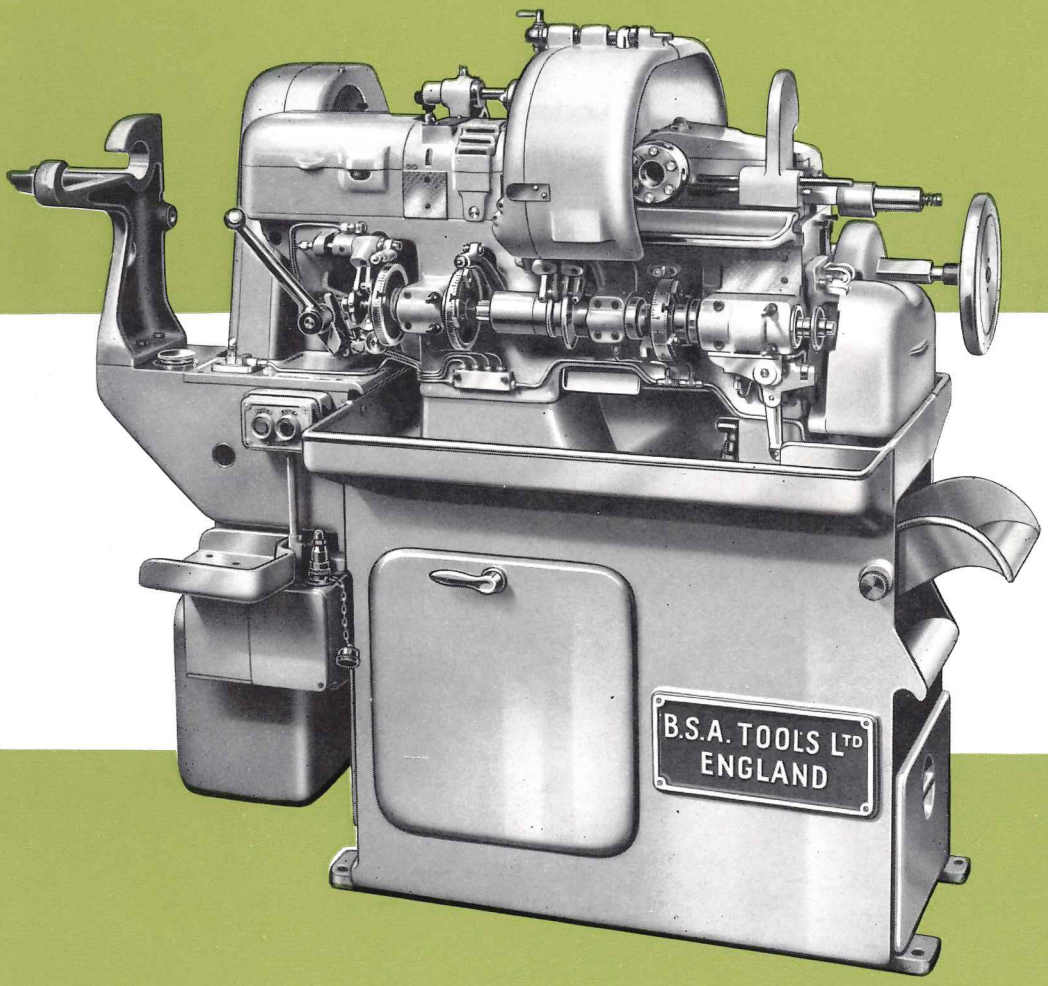
Am. Machine Tool Co.
Phila. Pa.
May 1958 JJ
82/117

B·S·A Nº 48



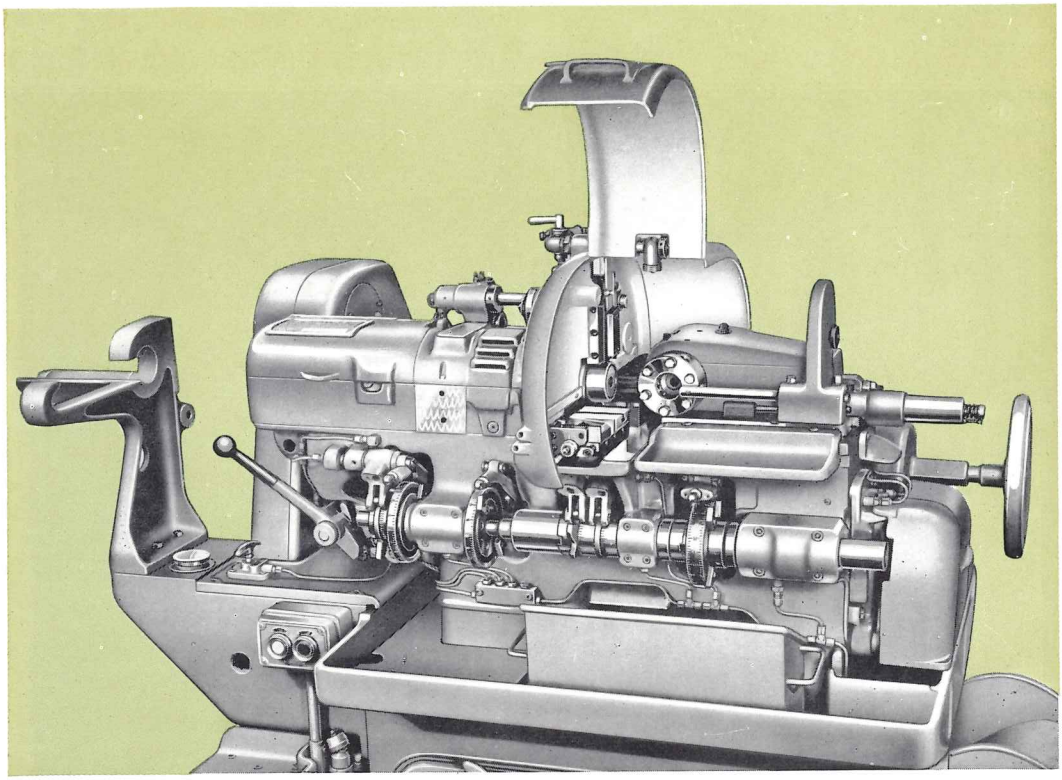
SINGLE — SPINDLE

AUTOMATIC SCREW MACHINE

DISTRIBUTED AND SERVICED
IN THE U. S. A. BY
THE NATIONAL ACME COMPANY
CLEVELAND, OHIO

82/117

B·S·A Nº 48



SINGLE-SPINDLE AUTOMATIC SCREW MACHINE

This well established model in the B.S.A. range of Single Spindle Automatic Screw Machines, incorporates several important new features.

To increase versatility and output a wider range of speeds is now available.

An arrangement enabling components which cannot be fed through the spindle to be magazine loaded into the chuck considerably widens the application of this machine.

To ensure that uniform lengths of bar are fed and turned, the turret is automatically located in relation to the chuck after each index.

This machine provides the most efficient means for the manufacture of components up to $\frac{1}{2}''$ (12.7 mm.) diameter in large and medium batches at high rates of production and with consistent accuracy.

The STANDARD B.S.A. No. 48 Single-Spindle Automatic is a SHORT STROKE machine, but it can be supplied as a LONG STROKE machine to order. (See Specifications page 10).

The feed fingers, collets, cams and tools are interchangeable with the Brown and Sharpe No. 00G Machine.

Also provided is a feed tube for No. 10 Brown and Sharpe Feed Finger ($\frac{7}{16}''$ (11.11 mm.) maximum diameter).

The standard turret and cross slide tools are interchangeable with the B.S.A. $\frac{3}{8}''$ (9.52 mm.) Machine. An additional nose cap and chuck sleeve are supplied with the machine to accommodate B.S.A. $\frac{3}{8}''$ and No. 00 B. B. & S. Machine size collets.

The machine represents the very latest developments in the design of automatic screw machines, incorporating all those features which our long experience in the design and construction of this type of machine has shown to be desirable. These features include — ease of installation, simplicity of control, high spindle speeds with safety and a range of speeds to suit all requirements within the capacity of the machine. The speed gears are of hardened steel.

The design and construction of the machine ensures absolute rigidity under all conditions and exceptional durability with consequent reduced maintenance costs.

Ease and safety of operation have been given careful consideration.

BASE

The base of the machine is well proportioned and specially arranged to ensure ample room for the escape of chips and their subsequent removal. In this connection, a swarf conveyor can be fitted at extra cost. A compartment is provided for accommodating all speed change gears, and cycle time gears not in use.

MOTOR DRIVE

The machine is arranged for self-contained motor drive. The motor is carried by a hinged plate mounted on the base of the machine at the rear and drives the main gearbox shaft through vee-belts ; screw adjustment is provided for maintaining correct tension of the belts. The arrangement of the drive permits the use of almost any make of standard dimension foot mounted motor. The advantage of this type of drive is that the machine forms an independent unit that can be lifted and moved to another site if desired.

WORK SPINDLE SPEEDS

A wide range of work spindle speeds from 166 r.p.m. to 7,370 r.p.m. is available by means of pick-off gears in the gearbox. Two alternative automatic speed reductions for threading to the ratio of 1 : 3 or 1 : 5 can be obtained on the standard machine. When using fast and reverse speeds only, a reduction of 1 : 7 is obtainable with special pick-off gears which can be furnished at extra cost. A special speed chart can be supplied if required.

AUTOMATIC SPEED CHANGES

By means of clutches on the spindle, operated from the camshaft, one forward and one reverse speed is available, or alternatively two speeds in either the forward or reverse direction.

The clutches impart a quick and certain movement. They have exceptionally long life and are readily accessible for adjustment.

HEADSTOCK

The work spindle of nitralloy steel is mounted on taper roller bearings at the front and rear. High speeds can be maintained continuously and the arrangement ensures permanent alignment of spindle and turret.

An adjustment is available to take up any excessive end play which might develop in the spindle after long periods of service. This adjustment is obtained by means of an adjusting nut located adjacent to the rear bearing housing. Graduations on the nut facilitate adjustment to fine limits.

The spindle is driven through two cone-type clutches by chains from the gearbox. This chain drive is smooth, positive, and allows the spindle bearings to be brought close together, resulting in a short, stiff spindle. Correct chain tension is maintained automatically.

The clutches are controlled from the camshaft, the appropriate clutch being engaged as required to give a forward or reverse rotation. The clutches are mounted on needle roller bearings, and the clutch operating sleeve is of special design incorporating anti-friction bearings.

The collets are toggle operated and adjustable for various stock diameters.

Automatic lubrication is provided to the headstock by a separate C.A.V. Plunger Type Pump having an independent oil tank.

BACKSHAFT

This is driven at a constant speed by belt from the main drive shaft. It can be engaged and disengaged through a lever-operated clutch of improved design. A hand wheel is provided for rotating the shaft by hand when setting up.

The dog clutches controlling the movement of the work spindle clutches, stock feeding, collet opening and closing cams, and indexing mechanism, are all mounted on the backshaft, and are operated by adjustable trips on the camshaft at the front of the machine.

The stock feed clutch is provided with a half "rev" and stop feature necessary for magazine loading of components which cannot be fed through the spindle.

CAMSHAFTS

The front camshaft carries the cams which control the cross slide movements, and also the trip drums which control the stock feed, spindle speed change and reversal, and the turret indexing mechanism.

The turret camshaft carries the lead cam which controls the longitudinal movements of the turret.

Both camshafts are driven from the backshaft through a train of pick-off gears and a worm reduction gear. The speed of the camshafts are entirely independent of the work spindle speeds.

The set of pick-off gears supplied with the machine enable 46 different cycle times to be obtained.

Special care has been taken to prevent backlash in the camshafts, the worm and worm wheel. The bevel gears between the turret and front camshafts being independently adjustable. Means have been provided for eliminating play between splined members and splined shafts.

The design of the machine is such that change-overs of cams, tools, etc., can be simply and rapidly made.

CROSS SLIDES

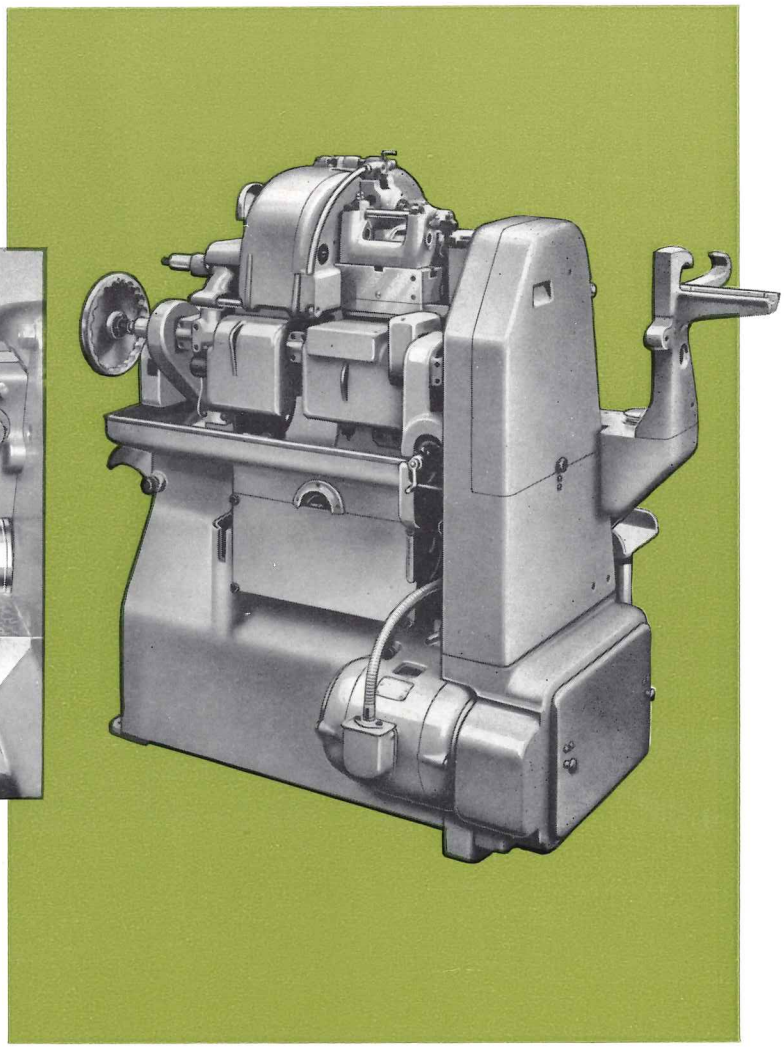
The arrangement of the cross slides is of particular interest. The slide bases are made of nitrided steel, and the special cast iron upper slides are fitted with side and end cover plates, which totally enclose the slide bases, thereby preventing any chips from getting between the slide faces.

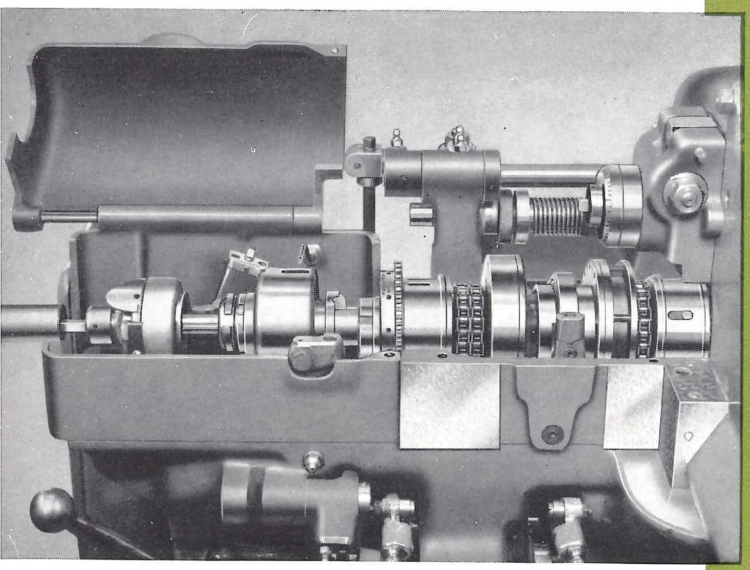
The cross slides are operated by cams on the camshaft, and to facilitate speedy adjustment when setting up, the cams are mounted on serrated sleeves.

The mechanism transmitting motion from the cams to the cross slides has been kept as simple as possible and is easily accessible. A third or vertical slide is also fitted. The motion for this being taken from an additional cam on the front camshaft.

Provision is made for the independent setting of each slide either forward or backward in relation to the centre line of the spindle.

Rear view of machine, showing adequate guarding arrangements to gearbox and backshaft driving belts



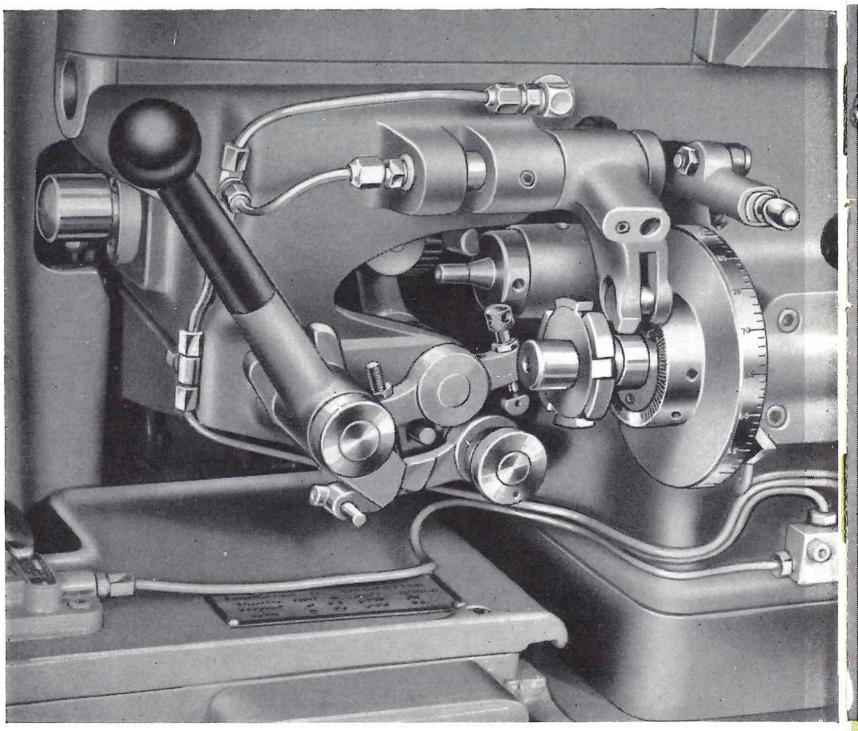


Cover removed from headstock to show arrangements of spindle bearings and driving chains

TURRET

The turret slide moves on a hardened steel slide having large vee-section ways. A taper gib is provided for taking up wear. The slide is massively designed to give maximum rigidity to turret tools when taking heavy cuts. Provision is made to ensure ample lubrication.

A vee plunger locating directly on the crank shaft ensures a uniform distance between turret and chuck after each indexing.



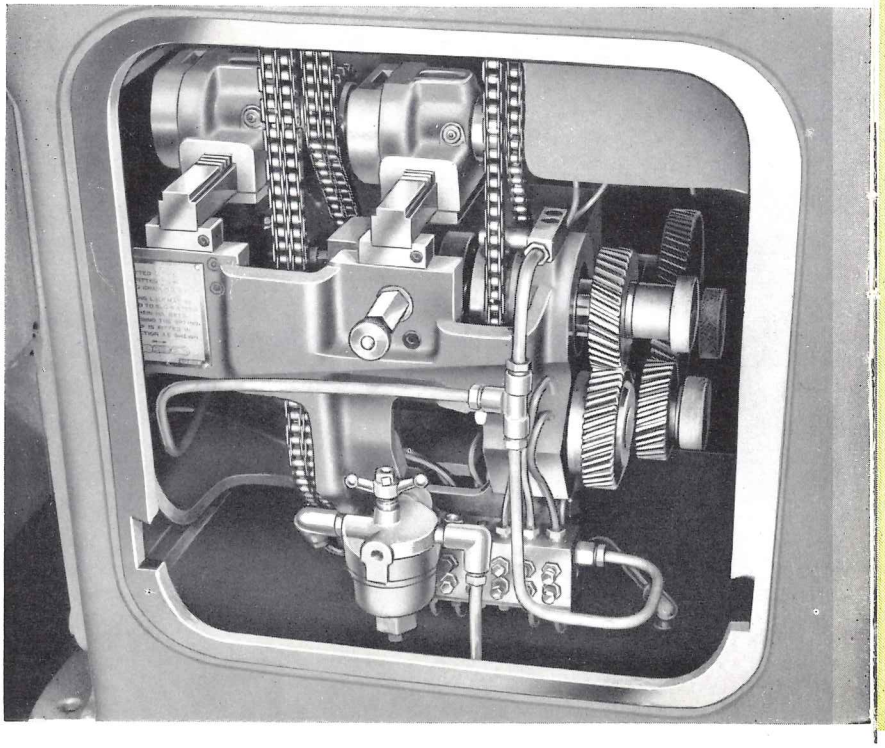
Automatic Stopping Mechanism

B·S·A Nº 48 *SINGLE-SPINDLE* AUTOMATIC SCREW MACHINE

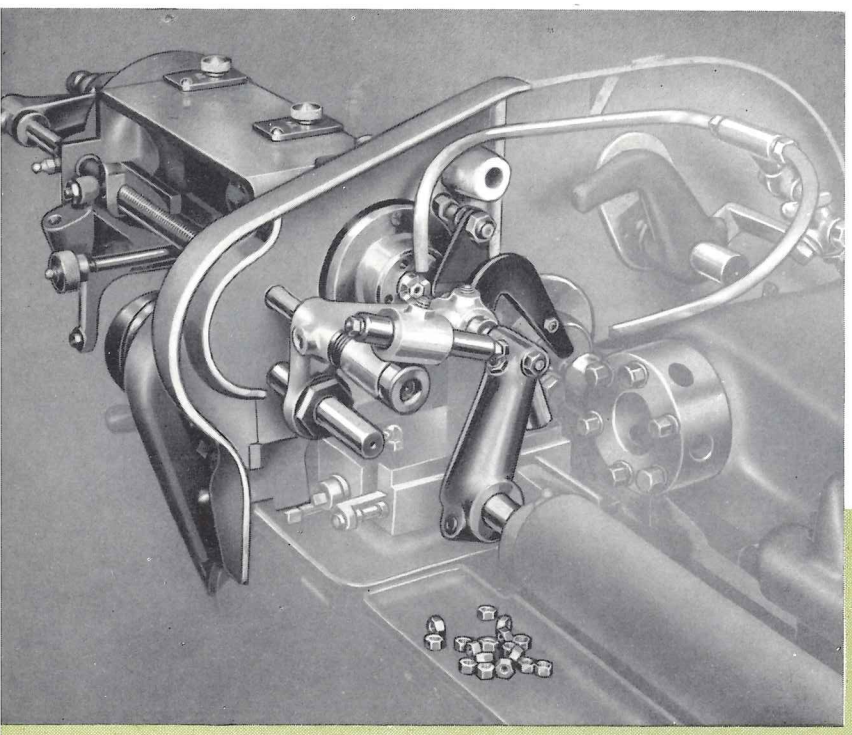
The vertical type turret of heat-treated steel has six stations for standard tools. A full range of tools is available for the machine, and are listed on pages 11 and 12.

The feed of the turret slide is actuated by cam-operated quadrant and rack. The standard machine is supplied with a short stroke turret. A long stroke turret is available if required.

The turret indexing mechanism operates through a link and Geneva motion, ensuring a smooth and exceedingly rapid movement. Double indexing mechanism for turret is standard with machine.



Cover removed from front of machine to show gearbox mechanism. On the right are the pick-off gears for varying the spindle speeds

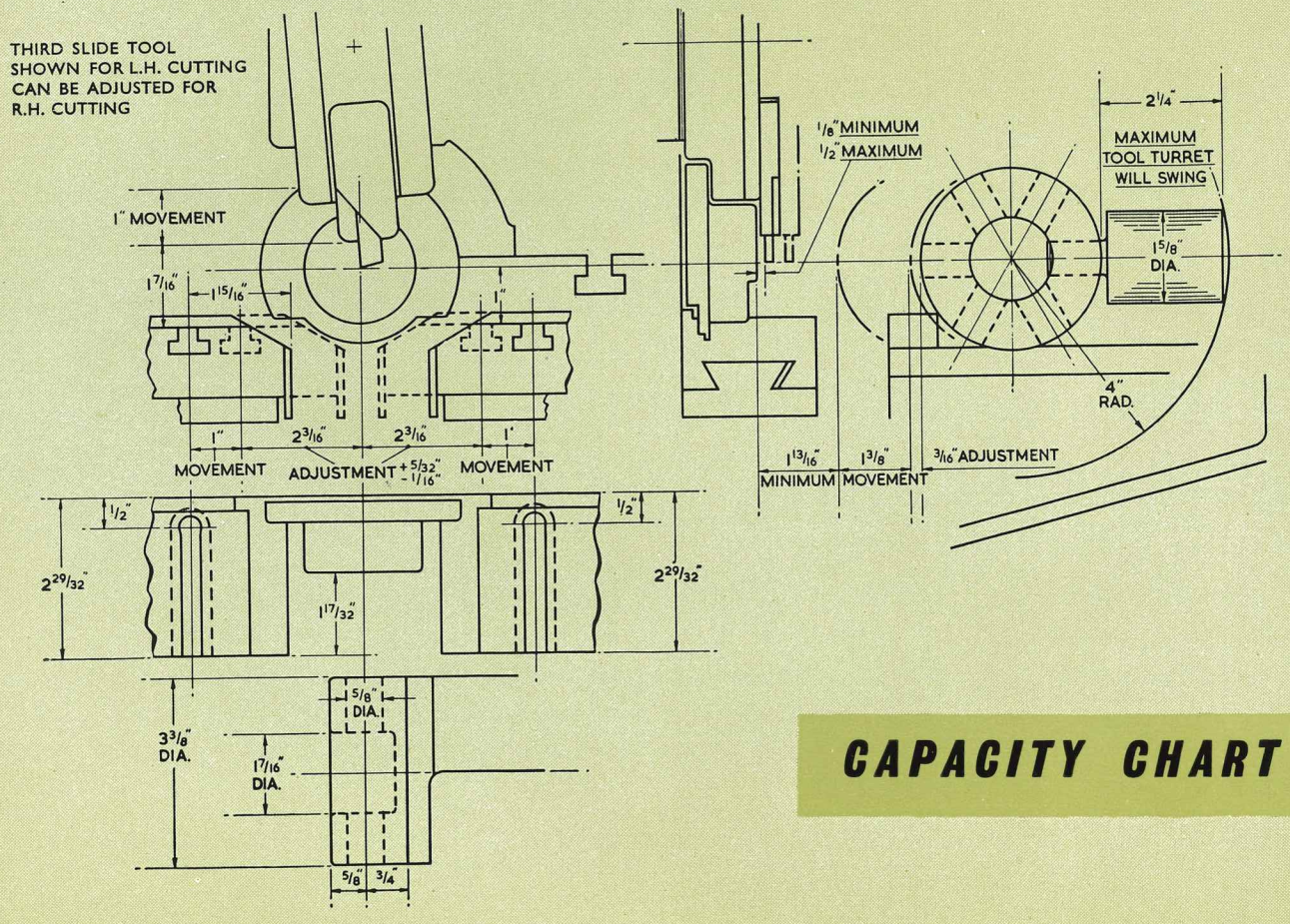


NUT TAPPING ATTACHMENT

The nuts, either hexagon or round, having been chamfered, cut off and drilled, are picked up by a transfer arm and inserted in the collet of the tapping spindle. A non-revolving bent tap is advanced under cam control, the threaded portion passing right through the nut blank.

TRADE MARKS

B·S·A TOOLS GROUP



CAPACITY CHART

1. Taper and Roller Bearing Spindle Cover.
2. Cross Slide Cams.
3. Turret Indexing Trip Mechanism.
4. Backshaft Handwheel for use when setting up.
5. Front Camshaft.

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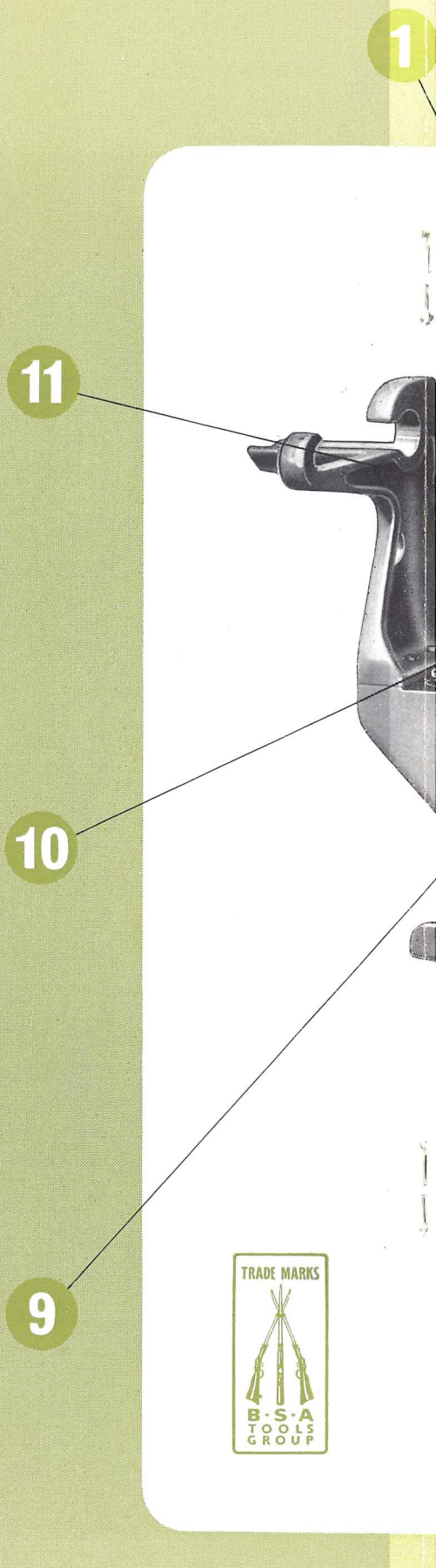
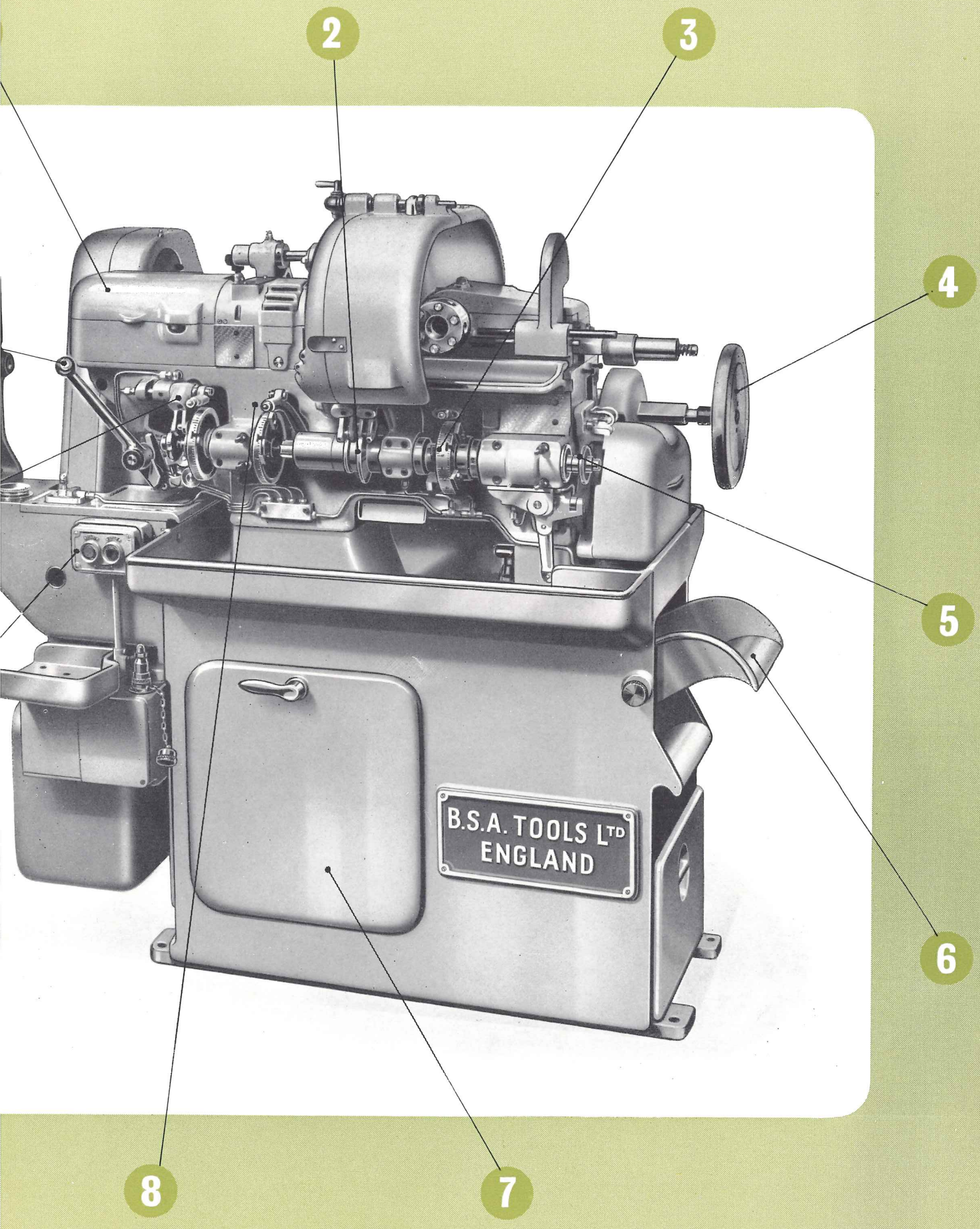
SINGLE — SPINDLE AUTOMATIC SCREW MACHINE

6. Specially Arranged to Facilitate Swarf Removal.
7. Access to Gearbox Mechanism.
8. Speed Change Trip Mechanism.
9. Self-contained Motor Drive with Push-Button Control.
10. Collet and Feed Trip Mechanism.
11. Starts and Stops all movements except spindle.



TRADE MARKS
B·S·A TOOLS GROUP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B.S.A. TOOLS LTD
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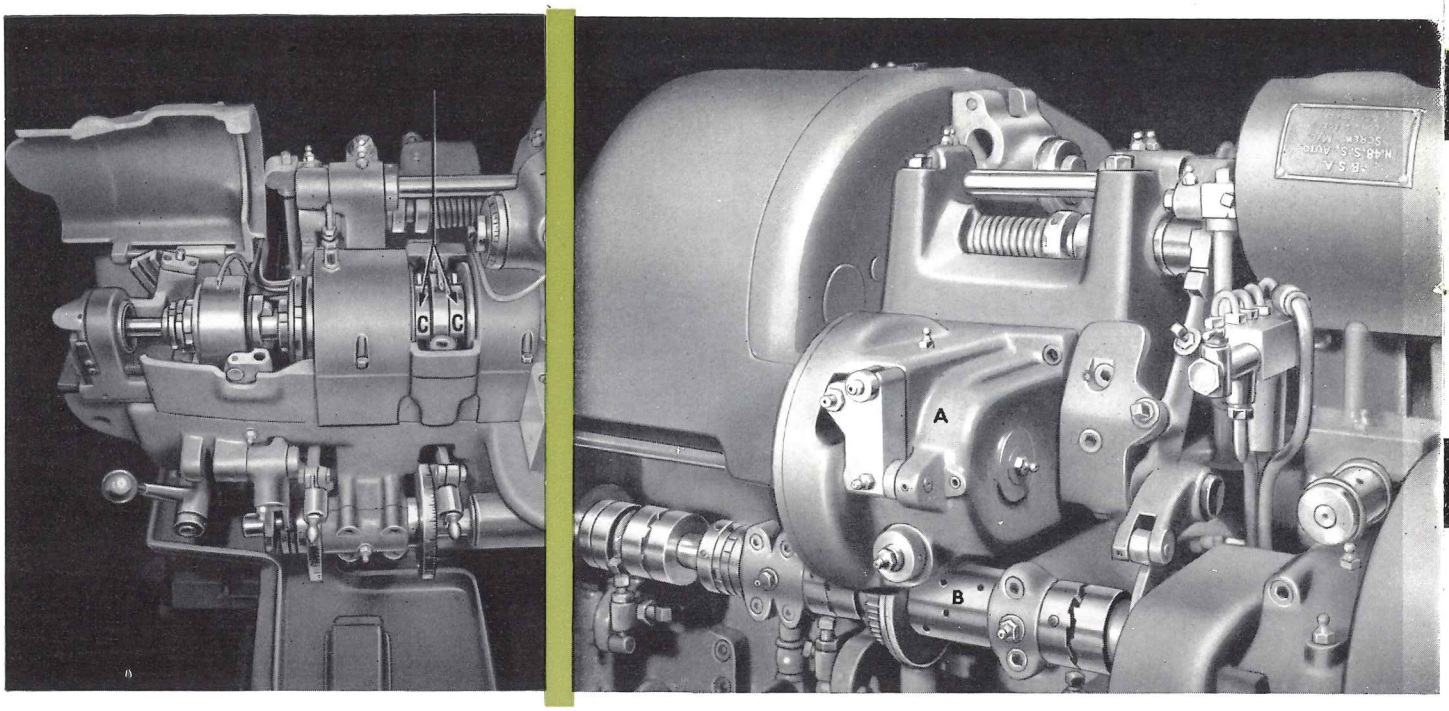


TWO-SPEED SPINDLE BRAKE ATTACHMENT illustrated enables the work spindle to be held stationary while cross drilling, milling from the turret or cross slide and similar operations are performed. The mechanism, including the cam, is contained in the casing "A" bolted to the rear of the machine which is driven through a 2 to 1 gear, from the intermittently rotating sleeve "B" on the backshaft. This cam operates the clutch lever and also a friction shoe which engages the centre member of the clutch operating sleeve "C", bringing the spindle to rest.

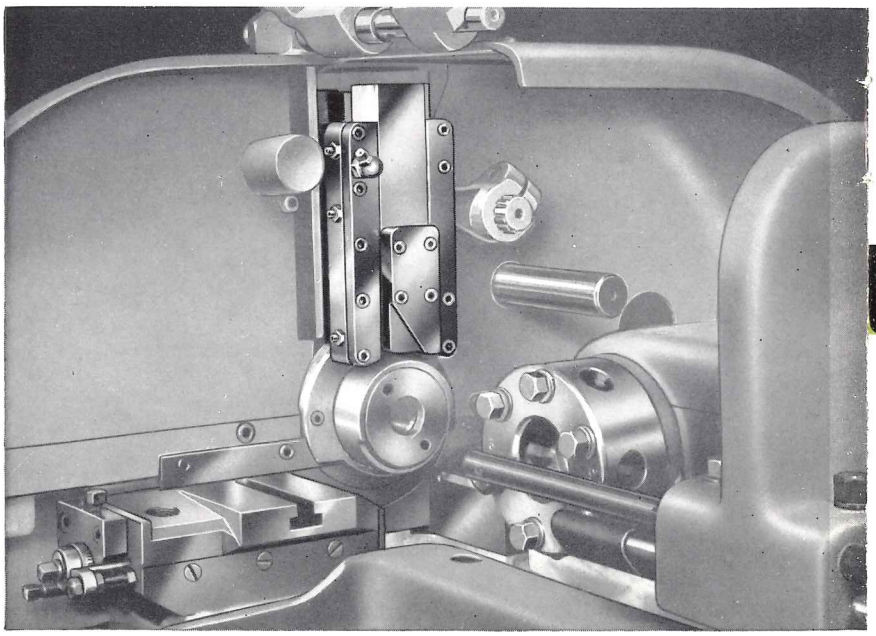
SAFETY FEATURES

The operator is protected against splash and flying chips by an effective guard.

All moving parts of the machine are adequately guarded, and ample provision is made to safeguard the machine against overload. A spring safety clutch in the cycle time gear train ensures that all movements of the machine except the spindle, stop instantly in the event of undue strain, which may be caused by overload or interference from tools or swarf.

Incorporated in the bar feed mechanism is a device for stopping all movements of the machine with the exception of the work spindle when insufficient bar stock remains to complete another component. This feature is of considerable importance and prevents damage to tools which may result from a short piece of bar stock being fed into the collet.

THIRD SLIDE. This attachment is primarily intended for carrying and operating a cut-off tool. It can also be used for various other operations usually done from the cross slides. The attachment is supplied complete with one cam blank.



WORKCHUTE

This is operated from an adjustable dog on the camshaft, and effectively separates swarf from work.

LUBRICATION

All headstock bearings and cross slides receive automatic lubrication from a pressure plunger pump which draws clean oil from the tank mounted at the top of the base casting. Chain and gearbox are lubricated by an independent type pump on the circulating principle, oil being obtained from the sump located in the machine base. All other bearings are lubricated from a built-in hand pump located at the front of the machine. The supply of oil is controlled by valves in the oil feed pipes, which ensure even lubrication to each individual bearing.

COOLANT PUMP AND FITTINGS

These are included, and ensure an ample supply of filtered coolant at a constant pressure.

TYPICAL EXAMPLES

OF WORK PRODUCED ON B.S.A. No. 48 SINGLE-SPINDLE AUTOMATIC SCREW MACHINES

STEEL 17½ SECS.

BRASS 9 SECS.

BRASS 8 SECS.

STEEL 2½ SECS.

BRASS 6 SECS.

STEEL 20 SECS.

STEEL 10 SECS.

STEEL 7 SECS.

BRASS 6 SECS.

STEEL 10 SECS.

BRASS 3 SECS.

BRASS 7 SECS.

BRASS 4 SECS.

BRASS 8 SECS.

STEEL 5 SECS.

BRASS 2 SECS.

STEEL 16 SECS.

BRASS 3¾ SECS.

BRASS 1 SEC.

ALUM 3 SECS.

BRASS 1½ SECS.

BRASS 11 SECS.

BRASS 1 SEC.

STEEL 20 SECS.

STANDARD EQUIPMENT

Standard equipment included with machine comprises :

*One additional Chuck Closing Sleeve for $\frac{3}{8}$" machine collets.
*Extra Nose Cap for use with above Chuck Closing Sleeve.
*One Feed Tube Adaptor for $\frac{3}{8}$" machine and B. & S. 00A feed fingers.
One Feed Tube for No. 48 Standard B. & S. No. 10A Feed Fingers.
Third Slide.
Turret Double Indexing Parts.
One Collet and Feed Finger, $\frac{1}{2}$" dia. capacity.
Two Cross Slide Cam Blanks.
One Lead Cam Blank.
One set of 26 Pick Off Gears for work spindle speed.
One set of 16 Pick Off Gears for cycle times.
Bar Tube Support.
One Silent Bar Tube for 12-feet bars.
Pumps and Fittings.
Splash Guards.
Tool Kit.

*This additional Chuck Closing Sleeve and Feed Tube Adaptor enables the B.S.A. No. 48 Machine to accommodate Collets and Feed Fingers used on B.S.A. $\frac{3}{8}$" Machine and also interchange with B. & S. Collet No. 00 and Feed Finger No. 00A. The Chuck closing sleeve and Feed Tube supplied with the No. 48 Machine also accommodates B. & S. No. 10 Collets and No. 10A Feed Fingers.

ADDITIONAL EQUIPMENT

A wide range of tools and attachments is available, these are listed on pages 11 and 12, and they can be supplied as required. A copy of our Tools and Attachments Booklets will be sent on request.

SPECIFICATION

Largest stock taken by using $\frac{3}{8}$" Machine Collet feed tube Adaptor	Round	$\frac{1}{8}$" (9·52 mm.)
	Square A/F	·265" (6·73 mm.)
	Hexagon A/F	·324" (8·23 mm.)
No. 48 Machine Collet and Feed Finger	Round	$\frac{1}{2}$" (12·7 mm.)
	Square A/F	·353" (8·96 mm.)
	Hexagon A/F	·437" (11·09 mm.)
Diameter of hole through standard feed tube		$\frac{17}{32}$" (13·49 mm.)
Maximum length dealt with at one movement — Long Stroke Turret	Turned	$1\frac{1}{4}$" (31·75 mm.)
	Fed	2" (50·8 mm.)
Maximum length dealt with at one movement — Short Stroke Turret	Turned	$\frac{3}{4}$" (19·05 mm.)
	Fed	1" (25·4 mm.)
Maximum diameter threaded using diehead		$\frac{3}{8}$" fine thread
Number of Spindle Speeds		36
Range of Spindle Speeds		166 to 7,370
Number of cycle times		46
Change Feed Gears to give one rev. of cams with Short Stroke Turret — seconds	Fastest	$\frac{3}{4}$
	Slowest	$56\frac{1}{4}$
Change Feed Gears to give one rev. of cams with Long Stroke Turret — seconds	Fastest	$\frac{3}{4}$
	Slowest	75
Actual time allowed to feed stock — Long Stroke Turret — seconds		$\frac{1}{3}$
Actual time allowed to feed stock — Short Stroke Turret — seconds		$\frac{1}{4}$
Actual time allowed for automatically changing speed, Long Stroke Turret — seconds		$\frac{1}{6}$
Actual time allowed for automatically changing speed, Short Stroke Turret — seconds		$\frac{1}{8}$
Actual time allowed to index turret, Long Stroke Turret		$\frac{1}{3}$
Actual time allowed to index turret, Short Stroke Turret		$\frac{1}{4}$
Diameter of Turret		$3\frac{3}{8}$" (85·72 mm.)
Number of holes in Turret		6
Diameter of holes in Turret		$\frac{5}{8}$" (15·88 mm.)
Maximum distance tools can project from Turret		$2\frac{1}{4}$" (57·15 mm.)
Maximum diameter tool Turret will swing		$1\frac{5}{8}$" (41·27 mm.)
Minimum distance Chuck to Turret		$1\frac{13}{16}$" (46·04 mm.)
Adjustment of Turret slide		$\frac{3}{16}$" (4·76 mm.)
Centre of spindle to top of cross slides		1" (25·4 mm.)
Movement of cross slide		1" (25·4 mm.)
H.P. of Motor required		3
Speed of Motor		1,425 r.p.m.
Floor space occupied		165" × 28" (4191 × 711 mm.)
Approximate net weight		1,876 lbs. (852·7 kg.)
Approximate gross weight		2,380 lbs. (1081·8 kg.)
Approximate shipping dimensions		60 cu. ft. (1·7 cu. mts.)

PRICE CODE

		CODEWORD
MACHINE	B.S.A. No. 48 Single-Spindle Automatic Screw Machine, with $\frac{1}{2}$″ (12·7 mm.) maximum capacity arranged for self-contained vee-belt motor drive, including vee-belts, vee-belt pulleys and guard, but exclusive of main electrical equipment	
	Standard equipment included with the machine is listed on page 10.	
MACHINE	STANDARD SHORT STROKE	48SSA
AS ABOVE	LONG STROKE (TO ORDER)	48LSA
DRIVE UNIT	3 h.p. Squirrel Cage Totally Enclosed Fan Cooled Motor, 1425 r.p.m. 220/380/420 volts, 3 phase, 50 cycles A.C. supply Motor Frame Size KNB 204	48SSM
STARTER	Special Horizontal Control Panel, Air Break Starter with three overloads, Isolator and H.R.C. Fuses, for 380/420 volts, 3 phase, 50 cycles. "Start" and "Stop" push button station. Rotary Reversing Switch	48SSS

EXTRAS

		DRAWING NO. & CODEWORD
ATTACHMENTS	Screw Slotting Attachment (motor driven, including transfer unit)	3/8–61A
	Nut Tapping Attachment Revolving Spindle (including transfer unit) ..	48–121AR
	Burring Attachment and Rear End Drilling (Collet Type)	3/8–72A
	Burring Attachment and Rear End Drilling (Pressure Plate Type)	48–109A
	Revolving Drilling Attachment	48–114AR
	Revolving Drill Holder Additional	3/8–63A
	Drill Collets for code 3/863A	3/8–11536
	Swing Stock Stop	3/8–43AR
	Internal Coolant Supply for Turret Tools	3/8–59A
	Longitudinal Turning Attachment	3/8–74A
	Longitudinal Turning Slide	48–107AR
	Spindle Brake Attachment, Single Speed	3/8–40AR
	*Spindle Brake Attachment, Two Speed	3/8–70AR
	Cross Drilling Attachment	48–120AR
	Double Movement Cross Slide	48–108AR
TURRET TOOLS	Adjustable Holder	ZG38–2664E
	Adjustable Holder and Turner	ZG38–3698
	Radial Knee Tools (Solid Type R.H.)	ZG38–3911
	Radial Knee Tools (Solid Type L.H.)	ZG38–3912
	Tangential Knee Tool (Solid Type R.H.)	ZG38–3901
	Tangential Knee Tool (Solid Type L.H.)	ZG38–3902
	Knee Tool (Adjustable)	ZG38–3900E
	Roller Box Tool (Single Tool R.H.)	ZG38–3952
	Roller Box Tool (Single Tool L.H.)	ZG38–3953
	Roller Carrier Capacity ·125″ to ·160″	ZG38–4369
	Box Tool (Vee Steady) R.H.	ZG38–2591
	Box Tool (Vee Steady) L.H.	ZG38–2989
	Centring and Facing Tool	ZG38–3701
	Drill R.H. for code ZG38–3701	ZG38–3701–2
	Drill L.H. for code ZG38–3701	ZG38–3701–4
	Centring and Facing Tool with Vee Steady R.H.	ZG38–4169–1
	Centring and Facing Tool with Vee Steady L.H.	ZG38–4169–2
	Drill Holder (Plain)	ZG38–3039E
	Tap Holder (Non-releasing)	ZG38–3048
	Tap Holder (Releasing)	ZG38–3031
	Button Die Holder (Non-releasing)	ZG38–4170
	Button Die Holder (Releasing)	ZG38–4235

*Spindle brake attachment can only be fitted to machine prior to delivery. When ordering state sequence of positions, i.e., Fast, Slow, Stop, Slow ; Slow, Stop, Fast, Slow, etc.

EXTRAS CONTINUED

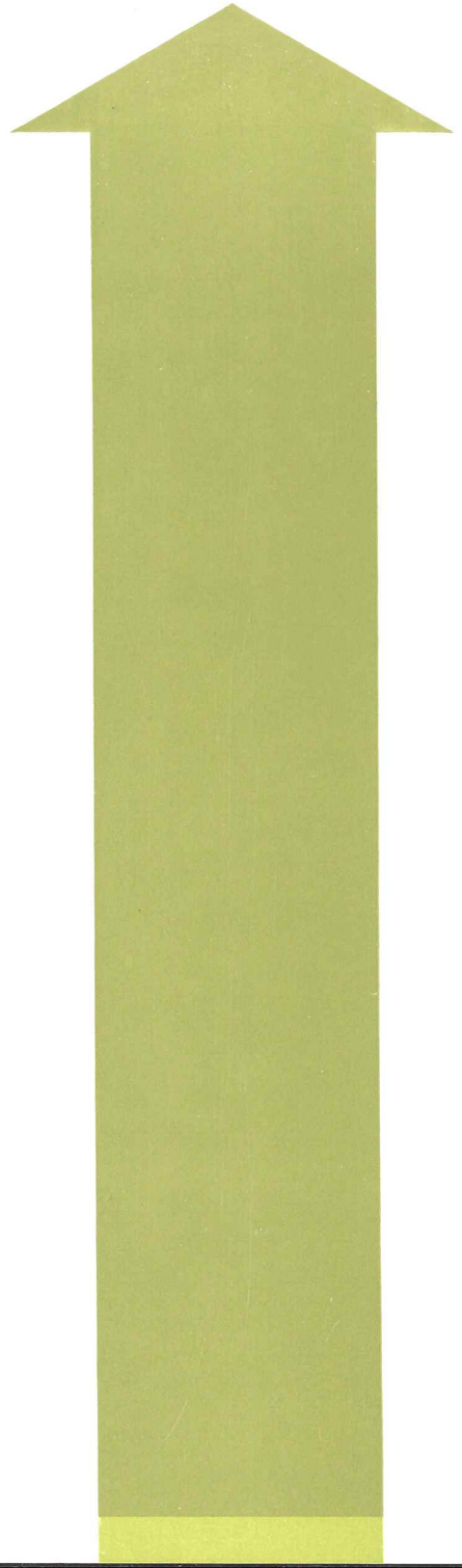
		DRAWING NO. & CODEWORD
	Stock Stop	ZG38–2227–5
	Adjustable Stock Stop	ZG38–3904
	Floating Reamer Holder	ZG38–4057
	Recessing Swing Tool (Front Slide operated)	ZG38–2993
	External Swing Tool R.H. (Front Slide operated)	ZG38–2911
	External Swing Tool L.H. (Front Slide operated)	ZG38–4054
	Back Rest for Swing Tools	ZG38–4055
	Back Rest for Turret	ZG38–3043
	Adjustable Knurl Holder	ZG38–2681
	Recessing Tool	ZG38–2830
CROSS SLIDE TOOLS	Tool Post for Circular Tools (Front)	ZG38–2906–1
	Tool Post for Circular Tools (Rear)	ZG38–2906–2
	Tool Post for Square Tools (Front Slide) R. & L.H.	ZG38–3796
	Tool Post for Square Tools (Rear Slide) R. & L.H.	ZG38–3795
	Blade Cut-Off Tool Posts (Rear Slide R.H.)	ZG38–3726
	Blade Cut-Off Tool Posts (Rear Slide L.H.)	ZG38–3728
	Blade Cut-Off Tool Posts (Front Slide R.H.)	ZG38–3797
	Fixed Guide Plates, Side Fixing Type (Front Cross Slide)	ZG38–3732
	Fixed Guide Plates, Raising Block Type (Front Cross Slide)	ZG38–3731
	Adjustable Guide Plates, Side Fixing Type (Front Cross Slide)	ZG38–3730
	Adjustable Guide Plates, Raising Block Type (Front Cross Slide)	ZG38–3038R
	Side Knurl Holder	ZG38–3030
	Top Knurl Holder	ZG38–3050
MISCEL-LANEOUS	Cam Blank (Turret) 5″	ZG38–2227/3
	Cam Blank Cross Slide 4½″	ZG38–2227/4
	Cam Blank Third Slide 4½″	ZG38–2227/4
	Cut-off Blade Third Slide	ZG38–4146
	Cam Templates	ZG38–4191
	Lever Templates	ZG38–3931
	Ratio Gears for 1–7 reduction, per pair	38/7501/2
	Screw Slotting Saws :	
	·024″ thick 75 teeth	38/13556/24
	·032″ thick 75 teeth	38/13556/32
	·040″ thick 75 teeth	38/13556/40
	·048″ thick 75 teeth	38/13556/48
	Speed Gears (additional), per pair	—
	Straight Knurls ½″ O/Dia. × 3/16″ thick × 3/16″ Hole :	
	53 teeth	ZG3047–1
	47 teeth	ZG3047–2
	41 teeth	ZG3047–3
	35 teeth	ZG3047–4
	28 teeth	ZG3047–5
	Standard Blank Bushings — O/Dia. ½″, Length 9/16″	ZG38–4354
	Standard Blank Bushings — O/Dia. ½″, Length ¾″	ZG38–4355
	Cut-Off Blades. Length 3½″, Thickness 1/16″, Width ½″	ZG38–3726–6
	Chain Riveting Tool for ⅜″ Pitch Chain	M.71
	Chain Rivet Extracting Tool for ⅜″ Pitch Chain	311006

B.S.A. TOOLS LTD

The policy of B.S.A. Tools Ltd., is one of continuous improvement. The right is reserved to alter the designs or constructional details of their manufactures at any time without giving notice.

TRADE MARKS

B·S·A TOOLS GROUP



B.S.A. Machine Tools

SINGLE SPINDLE AUTOMATIC SCREW MACHINES

SINGLE SPINDLE AUTOMATIC CHUCKING MACHINES

MULTI SPINDLE AUTOMATIC BAR MACHINES

MULTI SPINDLE AUTOMATIC CHUCKING MACHINES

MULTI TOOL PRODUCTION LATHES

COPY TURNING LATHE

TAPPING AND THREADING MACHINES

CENTRELESS GRINDING MACHINES

THREAD & FORM GENERATING MACHINES

VERTICAL BROACHING MACHINES

B.S.A. Small Tools & Machine Shop Equipment

THREAD ROLLS

BROACHES

MILLING CUTTERS

SCREWED SHANK TOOLS AND CHUCKS

TWIST DRILLS

REAMERS

TAPS & DIES

DRILL & LATHE CHUCKS

HACKSAW BLADES

ARBORS

FILES & RASPS

DRILL HOLDER & SETTING GAUGE

also

STANDARD & FLAMEPROOF LIMIT SWITCHES, etc.

Literature on request

TRADE MARKS

B·S·A TOOLS GROUP

B.S.A. TOOLS LTD.

BIRMINGHAM 33
ENGLAND

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Distributors :

THE NATIONAL ACME COMPANY,
CLEVELAND 8, OHIO.

Designed & Printed by Weather Oak Press Ltd., Birmingham 15, England